

Production Part Approval Dimensional Test Results 100% customer Print

[illegible]

Blanket statements of conformance are unacceptable for any test results.

TORAY

Innovation by Chemistry

Toray Resin Company, 821 W. Mausoleum Road, Shelbyville, Indiana 46176

Grade:	1401X34-TB1 SB053
Lot:	R29074
Date:	07/02/18

Certification of Properties				
Test	Method	Unit	Specification	Result
Visual			Same as Std.	Good
Color			Same as Std.	Good
MFR	ISO 1133	g/10 min.	3.2~4.8	3.7
Tensile strength	ISO 527	MPa	Min. 49	56.4
Tensile elongation	ISO 527	%	Min. 24	42.7
Charpy - notched	ISO 179	kJ/m2	Min. 2.7	3.6
For the ship date, please see the BOL. For the ship quantity, please see the BOL.				
Toray Resin Company certifies the above results are in accordance with our Quality Management System				

This Certificate of Properties is generated by electronic means. No signature is required. This document may not be reproduced, except in full, without the written consent of Toray Resin Company.

Process Flow Chart

Customer : Sumitomo Electrical Wiring Systems			Key Contact : Kleth Ramsey - (828) 687-9900 x221 - kramsey@atlas-plastics.com	
Atlas Part #: 69116579			Supplier : Atlas Precision	
Finish Part #: 69116579			Original Date : 3/29/2018	
Drawing : LUST-14N003-EA Rev. D1 Dated : 20181008			Revision : 1	
			Date Revised : 10/30/2018	
Supplier / Plant Approval Date : 10/30/2018				
Core Team : Quality Manager: Kleth Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Shupe / Operations Manager: Ray Fisher				

Step	Icon	Step #	Activity	Description
		#00	Receive And Confirm Order	Receive Order And Confirm Due Date. Order Packaging And/OR Materials.
		#10	Receive Raw Material	Receive Raw Material On Dock And Do Check For Physical Damage. Store In Assigned Area. Notify Quality Department Inspection Is Needed.
		#20	Certification And Audit Inspection	Complete Receiving Inspection. Apply Fifo Identification Labels To Each Container. If Acceptable Notify Warehouse For Movement To Storage Area. Reject Without Proper Material Certification, Lot Number Control And/OR Identification. Contact Vendor For Corrective Action If Rejected.
		#30	Material Mixing, Storage, And Drying	Prepare Material/Place In Dryer. ° TORAY 1401X34 SB-035 BLACK ° - Dry At 250 F° For 4 hrs Hours Place Identification Labels On All Containers. Write Time Material Will Be Dry On Laminated Flip Chart
		#40	Start Up Of Production	Verify Correct Material, Mold, And Line Clearance Set Process To Master, Verify Parameters Visually Check Part For Defect Once Process Is Stable. Verify Conveyor Reverses At Alarm. Submit To The Quality Department For Inspection.
		#45	Quality Start Up Inspection	Complete All Items On The Manufacturing Inspection Plan (MQIP) For Start Up Inspection Reject All Nonconforming Products With Formal Rejection Notice. (Form FQC_2) Quarantine All Suspect Material. Notify Production. Update Quality Alerts, Critical Position Sheets And Work Instructions As Appropriate.
		#50	Operator Run Production	Operator To Begin Packaging Of Product. Place Blue Container Under The Press. Discard Product In Gray Sample Container. Flip The Press Status Card To 'Production'. Obtain Paperwork And Label Package. Weigh Count And Label Each Completed Box Per Packaging Instructions. Place On Skid At Press.
		#60	Quality Inspection	Complete All Items On The Manufacturing Inspection Plan (MQIP) Reject All Nonconforming Products With Formal Rejection Notice. (Form FQC_2) Notify Production. Back Track And Quarantine All Suspect Material. Update Quality Alerts, Critical Position Sheets And Work Instructions As Appropriate.
		#70	Quality Roving Inspection	Complete All Items On The Manufacturing Inspection Plan (MQIP) Reject All Nonconforming Products With Formal Rejection Notice. (Form FQC_2) Notify Production. Back Track And Quarantine All Suspect Material. Update Quality Alerts, Critical Position Sheets And Work Instructions As Appropriate.
		#80	Initial Inspection Process	Product Is Transacted Into QA Lab/Certified Sort Area. Complete All Items On The Certified Sort Area Procedures (QA-090). Transact Product Out Of QA Lab/Certified Sort Area.
		#90	Final Audit	Inspected Parts Sent To Final Audit. Random Sample Boxes Checked For Defects And Weigh Count. Accepted Boxes Stamped Approved. Reject All Nonconforming Products With Formal Rejection Notice. (Form FQC_2) Notify Production. Back Track And Quarantine All Suspect Material. Update Quality Alerts, Critical Position Sheets And Work Instructions As Appropriate.
		#95	Storage And Preservation	Final Audit Accepted Boxes Moved To Warehouse For Storage.
		#100	Shipping	Inspect Product Labels For Duplicates. Inspect For Box Condition. Wrapped And Shipped To Customer As Per Customer Orders.

Symbol Legend	 Production	 Inspection	 Storage	 Certified Sort	 Shipping
---------------	--	--	---	--	--

Rev	Date	Changes	Revised
0	3/29/2018	Initial Release	Julie Callahan
1	10/30/2018	update drawing information	Julie Callahan



Process Failure Mode & Effect Analysis (FMEA)

Customer: Sunilomo Electrical Wiring Systems Atlas Part #: 69716579 Contact: Mike Ryan				Process: Injection Molding Finished Part #: 69716579 Prepared By: Julie Callahan				Responsible: Atlas Precision PFMEA Date: 3/29/2018 PFMEA Rev.: 1 PFMEA Rev Date: 10/30/2018											
Core Team: Quality Manager: Kieth Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Shupe / Operations Manager: Ray Fisher																			
Process Step	Function	Requirement	Failure Mode	Failure Effect	Severity	Classification	Potential Failure Cause	Preventive Action	Occurrence	Detection Action	Detection	RPN	Recommended Actions	Responsible Deadline	Actions Taken	Severity	Occurrence	Detection	RPN
#00	receive and confirm order	agreed upon lead time	terms not obtainable	Customer order could be delayed due to not having correct inventory of material	8		lack of material or no press time available	Automatic scheduling handled by ICMS / Changes are depicted on Daily Production Schedule.	2	any problems are solved with the help of the customer at the time of order acceptance.	3	48	N/A	N/A	N/A				
#10	receive raw material	resin	material is damaged	may be damaged contaminated or not identified correctly	8		Damage at vendors or trucking line	material is accepted only with physical check by warehouse personnel.	2	Receiving inspection and FIFO marking is done as per SCP 10.1.001	3	48	None	NA	NA				
#20	cert audit inspection	Certificate of Compliance	material does not meet specification	Material will be quarantined and use not allowed	8		Incorrect processing at material vendor	material is accepted only with certificate of compliance - required for use of material - visual check done on each container for cut, color and appearance.	2	Dock audit checks for this. And retains all certs for historical documents.	3	48	None	NA	NA				
#30	material mixing, storage and drying	Available material	inventory incorrect	Customer order could be delayed due to not having correct inventory of material	6		material incorrectly marked	upon arrival material tag FMTL-1 is applied by materials department for internal identification	4	material is verified as it is tagged	3	72	None	NA	NA				
		Correct mix of material	incorrect material identification	Parts may not function as per customer standards, part tolerance may not be met or process is inconsistent	8		wrong material prepared	Percent of mix, colorant, additives reground and lot number is recorded on material tag by material mixer as per work instruction WI MAT-054 Dryer function is checked when loaded	2	material is checked at startup and through out the run	3	48	None	NA	NA				
		Dry Material	incorrect dryer temp or time	Part will not be acceptable as per customer requirements	6		set point incorrect or dryer not functioning	material mixer verifies material data on master process card	4	temps are monitored by process audit each shift	3	72	None	NA	NA				



Process Failure Mode & Effect Analysis (FMEA)

Customer: Sumitomo Electrical Wiring Systems Atlas Part #: 69116579 Contact: Mike Ryan				Process: Injection Molding Finished Part #: 69116579 Prepared By: Julie Callahan				Responsible: Atlas Precision PFMEA Date: 3/29/2018 PFMEA Rev.: 1 PFMEA Rev Date: 10/30/2018											
Core Team: Quality Manager: Kieth Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Shupe / Operations Manager: Ray Fisher																			
Process Step	Function	Requirement	Failure Mode	Failure Effect	Severity	Classification	Potential Failure Cause	Preventive Action	Occurrence	Detection Action	Detection	Recommended Actions	Responsible Deadline	Actions Taken	Severity	Occurrence	Detection	RPN	
#40	start up of production	Correct Mold Setup	mold is not correct or set up incorrectly	wrong part is made or part set up in wrong	6		Mold tags not checked	Verification of mold is done by mold set up prior to handling the mold. If down problems are corrected prior to setting the mold following WI TLE-001 Mold Corrective Action Handling Request. Mold Report initiated at this time	3	Verification of product is done and reported on form FQC-1. Keys and setup checked	3	54	None	NA	NA				
		Line Clearance	parts are mixed	Start up condition of press not acceptable	8		Line was not cleared and parts could be mixed	Per MFG-061 Line Clearance Procedure and Form FMFG-6 Line Clearance Check List	2	Line clearance is verified as part of setup procedure	2	32	None	NA	NA				
		Conveyor Reverse When Press Alarms	Conveyor does not reverse	Conveyor carries potential bad product into good product	8		Alarms not set, improper function of conveyor	Conveyor check to be recorded on Request for inspection form.	3	physical check done by supervisor at startup	2	48	None	NA	NA				
#45	quality start up inspection	Inspection To Confirm Press Startup is Making Good Product	parts dont pass inspection	Parts not to print	7		Part are not visually acceptable and features as to print	Process tech checks process is stable and submits to QC. Inspection recorded on Form FQC-1 and acceptance or rejection is recorded on form FMFG-3.	2	manufacturing inspection plan is checked and verified on FQC-1 by quality	3	42	None	NA	NA				



Process Failure Mode & Effect Analysis (FMEA)

Customer: Sumitomo Electrical Wiring Systems Atlas Part #: 69116579 Contact: Mike Ryan Core Team: Quality Manager: Keith Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Shupe / Operations Manager: Ray Fisher				Process: Injection Molding Finished Part #: 69116579 Prepared By: Julie Callahan				Responsible: Atlas Precision PFMEA Date: 3/29/2018 PFMEA Rev.: 1 PFMEA Rev Date: 10/30/2018											
Process Step	Function	Requirement	Failure Mode	Failure Effect	Severity	Classification	Potential Failure Cause	Preventive Action	Occurrence	Detection Action	Detection	RPN	Recommended Actions	Responsible Deadline	Actions Taken	Severity	Occurrence	Detection	RPN
#50	Operator Run production	Color coded collection tub, flip chart on press	status of inspection is not identified	mixed parts	5		samples, bad parts and good parts can be mixed	sample parts are to run into gray tubs. Once accepted product is in blue tubs. Red tubs are rejected and known bad product. Yellow containers for runners.	3	Good parts have operator initials, pour up stamp, and/or final audit stamp. All rejected material is tagged and quarantined	3	45	None	NA	NA				
		Microscope blueprint	Bad product found	visual defects of any type found while in production	7		unacceptable product being made	PE-021 Abnormalities followed. For Mold Corrective action required TLG-001 is followed. Condition Range Check sheet Form FPRO-20 required when defect is found. Global requirements to be determined and met.	3	All unacceptable product is rejected with form FQC-2, logged into quarantine cage, and then dispositioned by material review board	2	42	None	NA	NA				
		Packing Instruction	quality not consistent	parts not packed correctly and damaged	7		wrong box is used or not handled correctly	packing instructions printed on Shop Order sheet each order.	3	box verified in final audit prior to shipping	2	42	None	NA	NA				
		Process Audit Completed	quality not consistent	visual defects are found during operator check	7		unacceptable product being made	Quality notified. Product quarantined. Supervisor notified. Condition Range Check sheet Form FPRO-20 required when defect is found. Global requirements to be determined and met.	3	Product produced on unstable processes are placed on 100% offline sort	2	42	None	NA	NA				



Form #: FQC-28
Revision : 2 (2/21/2012)

Process Failure Mode & Effect Analysis (FMEA)

Customer : Sumitomo Electrical Wiring Systems Atlas Part #: 69116579 Contact : Mike Ryan				Process : Injection Molding Finished Part #: 69116579 Prepared By : Julie Callahan				Responsible : Atlas Precision PFMEA Date : 3/29/2018 PFMEA Rev. : 1 PFMEA Rev Date : 10/30/2018												
Core Team : Quality Manager: Keith Ramsey / Process Engineer: Julie Callahan / Operations Manager: Ray Fisher																				
Process Step	Function	Requirement	Failure Mode	Failure Effect	Severity	Classification	Potential Failure Cause	Preventive Action	Occurrence	Detection Action	Detection	RPN	Recommended Actions	Responsible Deadline	Actions Taken	Severity	Occurrence	Detection	RPN	
#60	quality inspection	Product Must Meet Customer Requirements	part has physical or visual defect	Part is not functional, has visual or dimensional defect	7		Problem with material mix, type or drying	Dryer set point and time audited to master process card and recorded on audit form as above. Material type checked to what is ordered by customer. This is recorded on Shop Order Sheet by customer service when order is received. Checked at start up and recorded on form FQC-1.	2	Material recorded on FQC-1, matched to respective print, and verified by quality inspector	5	70	None	NA	NA					
			part has physical or visual defect	Part is not functional, has visual or dimensional defect	7	part does not pass required SOP inspection criteria	All requirements outlined on Control Plan recorded on form manufacturing Quality Inspection Plan FQC-1	2	visual inspection recorded per the inspection instruction sheet to meet customer drawing and internal tolerances.	5	70	None	NA	NA						
			equipment not capable of producing part	Part is not functional, has visual or dimensional defect	7	Problem With Press	Any problems found with press MNT-004 Completion of Maintenance Repair Request (Form F-32)	2	Product produced on unstable processes are placed on 100% offline sort	4	56	None	NA	NA						
			part has physical, visual defect or label identification problem	parts have dimensional problem	5	Parts do not measure to print	Measure all dimensions as per the QA Inspection Instruction Sheet.	3	functional gaging and/or mating parts used where available and dimensions measured to tolerances allowed	3	45	None	NA	NA						



Form #: FQC-28
Revision: 2 (2/21/2013)

Process Failure Mode & Effect Analysis (FMEA)

Customer: Sumitomo Electrical Wiring Systems Atlas Part #: 69116579 Contact: Mike Ryan				Process: Injection Molding Finished Part #: 69116579 Prepared By: Julie Callahan				Responsible: Atlas Precision PFMEA Date: 3/29/2018 PFMEA Rev.: 1 PFMEA Rev Date: 10/30/2018										
Core Team: Quality Manager: Keith Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Stupe / Operations Manager: Ray Fisher																		
Process Step	Function	Requirement	Failure Mode	Failure Effect	Severity	Classification	Potential Failure Cause	Preventive Action	Occurrence	Detection Action	Detection	Recommended Actions	Responsible Deadline	Actions Taken	Severity	Occurrence	Detection	RPN
#70	Quality Roving Inspection	Product Must Meet Customer Requirements	part has physical, visual defect or label identification problem	parts have visual or label problem	4		visual defects, packing defects or label defects are found.	SDP 10.1-001 in Process Inspection and testing are followed.	3	All product with label issues are identified with tag FQC-2, and held for corrections	3	None	NA	NA				
			Bad product found	visual defects of any type found while in production	7	unacceptable product being made	PE-021 Abnormalities followed. For Mold Corrective action required TLG-001 is followed. Condition Range Check sheet Form FPRO-20 required when defect is found. Global requirements to be determined and met.	3	Back track procedures followed and all non conforming product is rejected and quarantined	2	42	None	NA	NA				
#80	GR-12 Containment or Mold Color Identification sort	Certified Sort Inspection Processes and Certified Sorters	initial run no quality history	Parts and process do not have run history and defects may be missed	8		unacceptable product being made	None	3	5000 shots to be checked 100% off line and/or per customer requirements	2	48	NA	NA				
#90	Final audit	Product Must Meet Customer Requirements	quantity of parts not consistent	customer rejection for incorrect pack or parts - line down	7		wrong part or revision of part sent to customer, parts with visual defects or wrong labels sent to customer	each box identified with bar code, date, part number and revision. Checked by Final Audit prior to shipping.	2	All boxes are scanned with IQMS system to detect label and code non conformities	2	28	NA	NA				
#95	storage and preservation	Ware house location assigned	parts lost or damaged	customer does not receive parts by due date	8		parts not accessible in warehouse or FIFO not being used	Parts assigned rack in warehouse and protected until shipment.	2	Parts are assigned to a position in stock and traceable through inventory	3	48	NA	NA				



Process Failure Mode & Effect Analysis (FMEA)

Customer : Sumitomo Electrical Wiring Systems Atlas Part # : 69116579 Contact : Mike Ryan				Process : Injection Molding Finished Part #: 69116579 Prepared By : Julie Callahan				Responsible : Atlas Precision PFMEA Date : 3/29/2018 PFMEA Rev. : 1 PFMEA Rev Date : 10/30/2018										
Core Team : Quality Manager: Keith Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Shupe / Operations Manager: Ray Fisher																		
Process Step	Function	Requirement	Failure Mode	Failure Effect	Severity	Classification	Potential Failure Cause	Preventive Action	Occurrence	Detection Action	Detection	Recommended Actions	Responsible Deadline	Actions Taken	Severity	Occurrence	Detection	RPN
#100	Shipping	scanned in IQMS	parts lost or damaged or not shipped	customer does not receive parts by due date	8		damaged parts or boxes sent to customer. Shipment does not arrive on time. Duplicate serial numbers.	each day a shipping log is pulled with the due dates. Product is removed from the warehouse and wrapped for shipment. Boxes are checked for damage. Logistics are determined at order acceptance. Serial numbers are checked.	2	Serial numbers, shop orders, part numbers, and codes are scanned on each box using IQMS prior to shipping	2	None	NA	NA				32

FMEA Revision History	Date	Rev.	Initial Release	Changes	Revised
	3/29/2018	0	Initial Release		Julie Callahan
	10/30/2018	1	update drawing information		Julie Callahan



Control Plans

Form #: FCC-29
Revision: 2 (3/26/2013)

Customer: Summitone Electrical Wiring Systems

Atlas Part #: 69116579

Finish Part #: 69116579

Drawing: LUST-14N003-EA Rev. D1 Dated: 20161008

Prototype Pre-Production Production

Supplier / Plant Approval Date: 10/30/2018

Key Contact: Keith Ramsey - (828) 687-9900 x221 - kramsey@atlas-plastics.com

Supplier: Atlas Precision

Original Date: 3/29/2018

Revision: 1

Date Revised: 10/30/2018

Customer Engineering Approval Date (if required):

Customer Quality Approval Date (if required):

Core Team: Quality Manager: Keith Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Shupe / Operations Manager: Ray Fisher

Process Step	Process Name / Operation Description	Machine, Device, Jig, Tool For Manufacturing	#	Product	Process	Special Characteristic Class	Product/Process Specification Tolerance	Evaluation Measurement Technique	Sample Size	Sample Frequency	Control Method	Reaction Plan
#00	receive and confirm order	Database		Part 69116579 Mold M1717 Cavity M1-M8		N/A	Atlas Customer Related Processes	Material Lead Time And Due Date	Per Order	Per Order	Entry into Database	If any problem exist contact customer and solve prior to order acceptance
#10	Receive raw material	Material Vendor		Material		N/A	* TORAY 1401K34 SB-035 BLACK Material Color, Length, and Width Must Be Checked With Numbers And Or Colors)	Check For Physical Damage, Material Color, Length, and Width Must Be Checked With FIFO Dtl Per SOP 10-1-5001	Per Order	Sample Each Lot	Check As Unloading	Reject And Contact Material Supplier For Damage Or Incorrect Material
#20	Certification Inspection	Dock Inspection			Material Certification Of Analysis Confirmation	N/A	Material Vendor Supplied Certification	Check For Certification Verify That Certification Matches Material Verify That Certification Meets specification stated on the vendor supplied form.	Per Order	Sample Each Lot	Check And Retain Material Certification Per Work Instruction 8.2.4-1	Reject And Contact Material Supplier If There Is No Certification
#30	Material Mixing Storage, And Drying	Mix Department Personnel, Mixers, Tumblers As Needed			Allocation Of Rountages Or Mixing As Required, Drying Of Material	N/A	Load Dryer Set Temp At 250 F°F For 4 hrs Hours Record Time Material Will Be Dry On The Laminated Flip Card At The Press	Atlas Daily Material Schedule, #FMTL-1	Pounds As Needed	Daily	Discussed Daily in Planning Meeting	Contact Gary Kendall in PIC If There Is A Material Problem Or Shortage, Customer Contact If This Effects Ship Date
#40	Start Up Of Production	Correct Press (As Defined On Master Process Card)			Start Up Procedures	N/A	MFG-061 Line Clearance MFG-PR-059 Start Up Master Process Card	Request For Inspection FMTG-3	Each Start Up	At Production Start Up And Also Required At The First Restart If The Press Was Down At The Beginning Of Your Shift	Master Process Card FPRO-13	Press To Be Rejected For Start Up If Line Is Not Clear, Process Changes Must Be Evaluated And Approved By Process Engineer
#45	Quality Start Up Inspection	Microscope, Customer Standards			Start Up For Production Run approval	N/A	Visual Inspection For Defects, Inspect all Items on FCC-1 MDIP Identified for start up	Request For Inspection FMTG-3	1 Shot	At Production Start Up And Also Required At The First Restart If The Press Was Down At The Beginning Of Your Shift	Complete Request For Inspection Change To Blue Bin, And Notify Production Of Part Status.	Press To Be Rejected For Start Up If Line Is Not Clear, Or If Request For Inspection Is Incomplete, or Non-Conforming. Process Changes Must Be Evaluated And Approved By Process Engineer



Control Plans

Form #: FOC-29
Revision: 2 (3/26/2013)

Customer: Summitone Electrical Wiring Systems

Atlas Part #: 69116579

Finish Part #: 69116579

Drawing: LUST-14N003-EA Rev. D1 Dated: 20161008

Prototype Pre-Production Production

Supplier / Plant Approval Date: 10/30/2018

Key Contact: Kiehl Ramsey - (628) 687-9900 x221 - kramsey@atlas-plastics.com

Customer Engineering Approval Date (if required):

Supplier: Atlas Precision

Original Date: 3/29/2018

Customer Quality Approval Date (if required):

Revision: 1

Date Revised: 10/30/2018

Process Engineer: Zach Shupe / Operations Manager: Ray Fisher

Process Flow		Characteristics		Methods		Reaction Plan
Process Step	Process Name / Operation Description	Machine, Device, Jig, Tool For Manufacturing	#	Product	Process	
					Special Characteristic Class	Product / Process Specification Tolerance
#50	Operator Run Production	Visual Inspection		Appearance	N/A	No Broken Pins
						No Grease Or Oil
						No Broken Parts
						No Cracks
						No Discoloration
						No Deformation
						No Voids
						No Bubbles
						No Warpage
						No Weld Lines
#60	Quality Inspection	Visual Inspection		Appearance	N/A	No Sink
						No Gate/Ejector Marks
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
						Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)
#50	Operator Run Production	Visual Verification			Packaging	N/A
#60	Quality Inspection	Functional		Per Inspection Instruction Sheet	N/A	Check as per the Inspection Instruction Sheet and record on Atlas MQIP (FOC-1)



Control Plans

Form #: FQC-29
Revision: 2 (3/26/2013)

Customer: Summit Electrical Wiring Systems

Atlas Part #: 69116579

Finish Part #: 69116579

Drawing: LUST-14N003-EA Rev. D1 Dated: 20181008

Prototype Pre-Production Production

Key Contact: Keith Ramsey - (620) 687-9900 x221 - kramsey@atlas-plastics.com

Supplier: Atlas Precision

Revision: 1

Original Date: 3/29/2018

Date Revised: 10/30/2018

Supplier / Plant Approval Date: 10/30/2018

Customer Engineering Approval Date (if required):

Customer Quality Approval Date (if required):

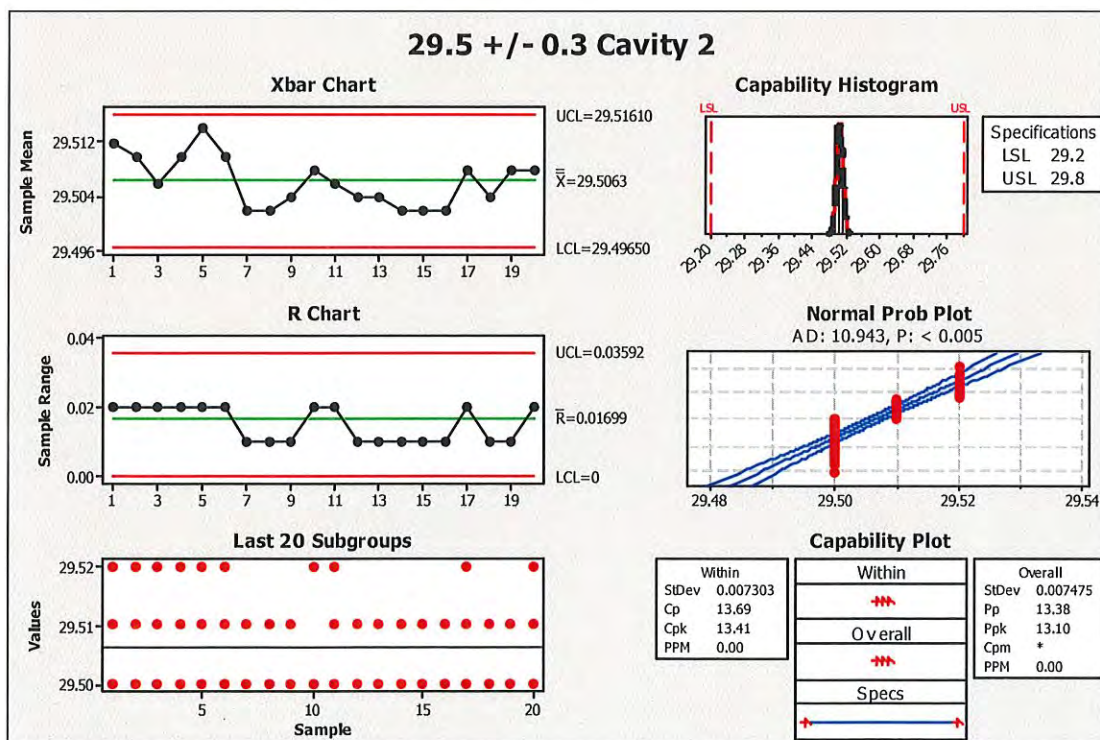
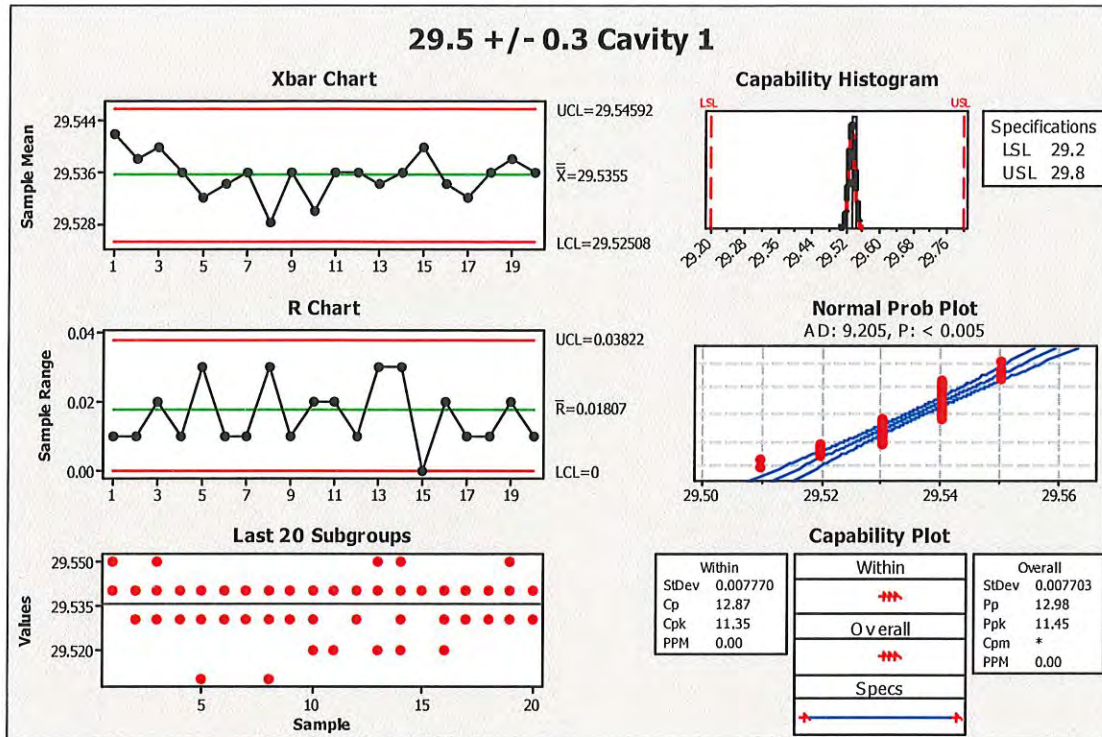
Core Team: Quality Manager: Keith Ramsey / Quality Engineer: Julie Callahan / Process Engineer: Zach Shupe / Operations Manager: Ray Fisher

Process Flow			Characteristics			Methods					Reaction Plan	
Process Step	Process Name / Operation Description	Machine, Device, Jig, Tool For Manufacturing	#	Product	Process	Special Characteristic Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size	Sample Frequency	Control Method	Reaction Plan
#70	Quality Roving Inspection	In Process Inspection		Appearance	Roving Inspection On Production Floor	N/A	verification of alarms, visual check of product quality and comparison to CPC sheet and quality alerts	visual with verification of alarm check recorded	1 Box	Random Box Sampling Once Per Shift	Inspector Verifies Record On Manufacturing Quality Inspection Plan Form FQC-1	Reject If Out Of Tolerance, Notify Supervisor, Quarantine Suspect Product, Determine Root Cause, Reprocess, Reinspect As Needed
				Appearance	Roving Inspection On Production Floor	N/A	Visual Inspection For Defects. Inspect per visual standards.	Visual	1 shot per inspection	Sampling Six Times Per Shift	Inspector Verifies Record on Daily QA/R Inspection Report FQC-082	Reject If Out Of Tolerance, Notify Supervisor, Quarantine Suspect Product, Determine Root Cause, Reprocess, Reinspect As Needed
#80	GP-12 Containment or Mold Color Identification sort	GP-12 Containment or Mold Color Identification sort		Sort requirement	Containment	N/A	Verify Visual Inspection, Box Condition, Weight Count.	Visual Per Critical Position (last to fill) sheet and any quality alerts	100%	requirements as called out per GM (GP12 Standards) 90 days past SOP or as defined by Atlas color coding system	QA-091 GP-12 Area Procedure, QA-090 Certified Sort Area Procedures, Critical Position sheet FQC-52, and Certified Sort Report FQC-61	Rejections Handled per SOP 13.0-001/Control of Nonconforming Product And Sort Procedures
#90	Final Audit	Work Instructions		Appearance	Processing	N/A	Verify Visual Inspection, Box Condition, Weight Count.	Visual Per Final Audit Standard Operating Procedures	5 Random Boxes	Per Pallet	Stamp And/Or Initial	Reject If Out Of Tolerance, Notify Supervisor, Quarantine Suspect Product, Determine Root Cause, Reprocess, Reinspect As Needed
#95	Storage And Preservation	Warehouse		Each Order		N/A	Assign Storage, Stack, Or Wrap	Per Warehouse Standard Operating Procedures	All	Daily	Warehouse Standard Operating Procedures	Reject Any Damaged Boxes And Store In Quarantine Area
#100	Shipping	Truck Line		69116579		N/A	Use Approved Trucking	Bill Of Lading	All	Daily	Warehouse Standard Operating Procedures	Notify Customer If There Are Any Logistic Problem That Will Effect Delivery

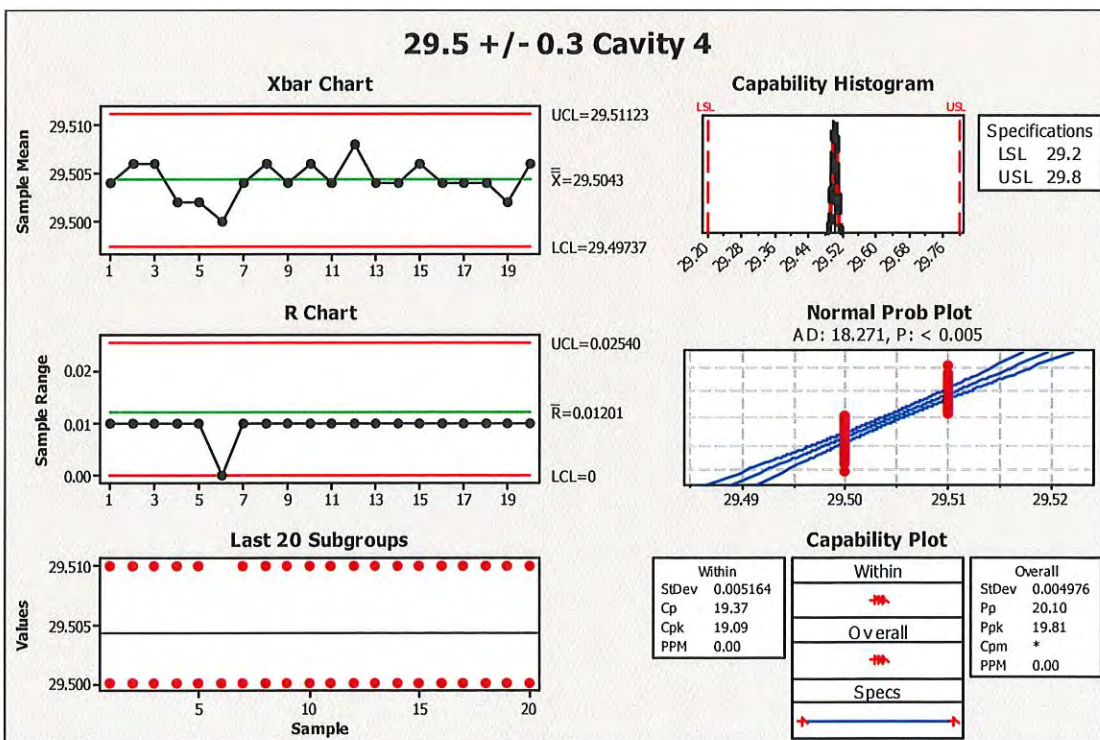
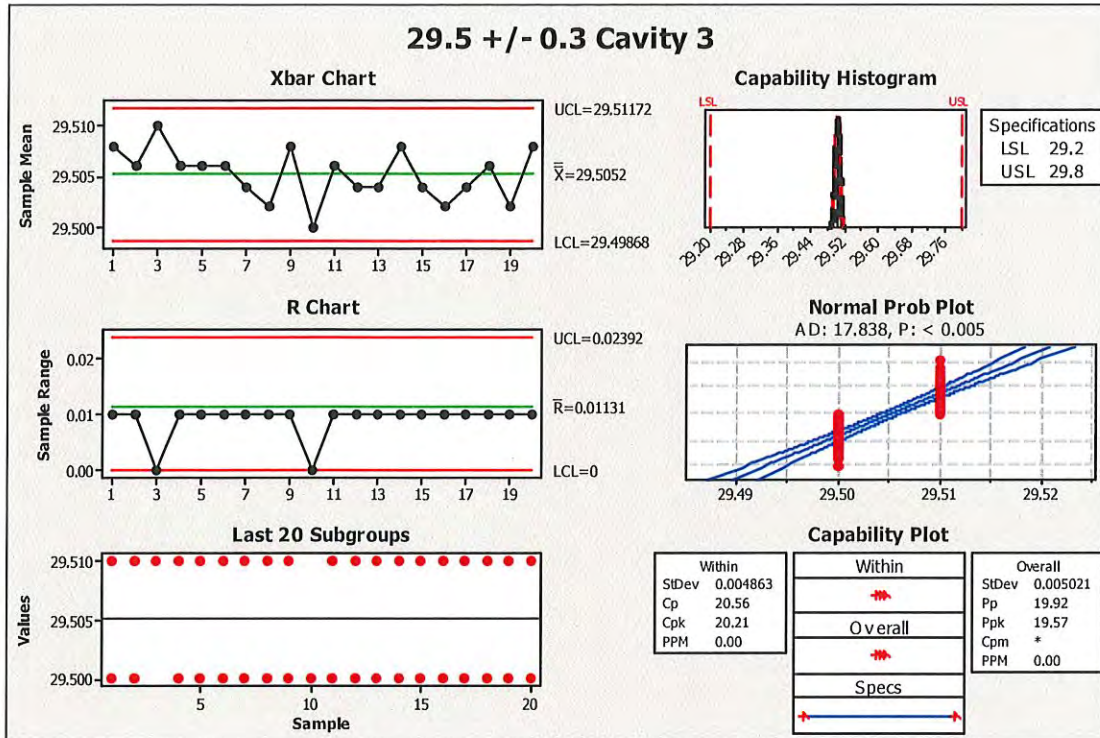
Data		Rev		Change		Revised	
3/29/2018		0		Initial Release		Julie Callahan	
10/30/2018		1		update drawing information		Julie Callahan	

Control Plan Revision History

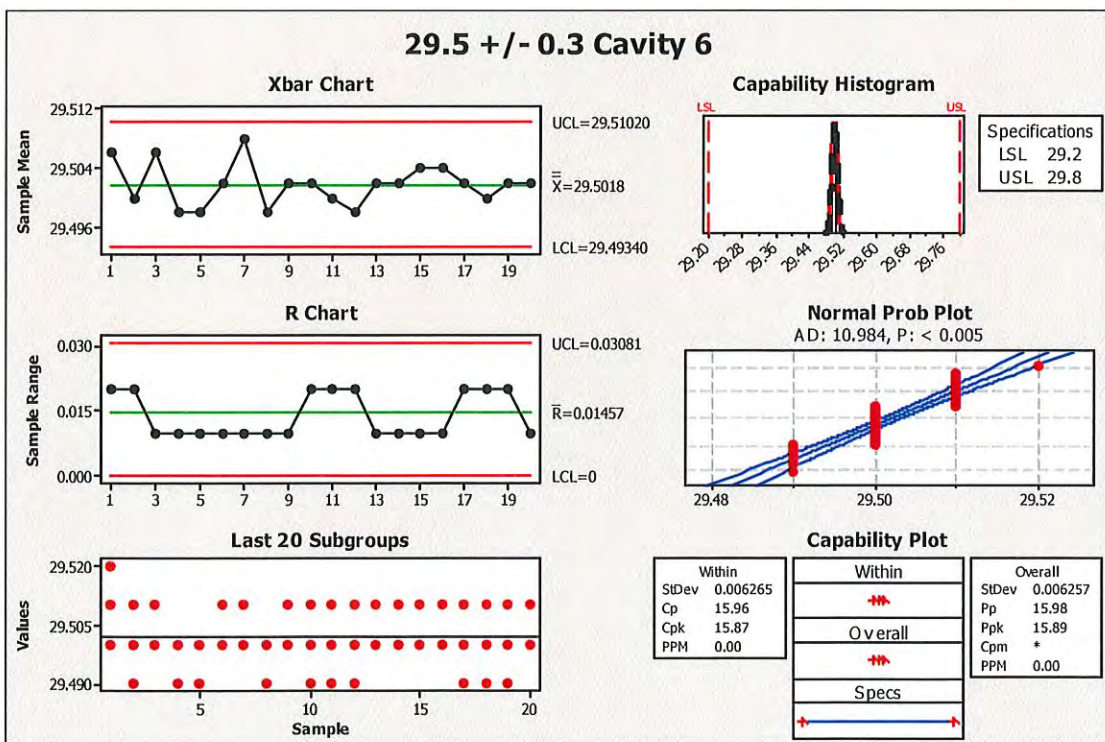
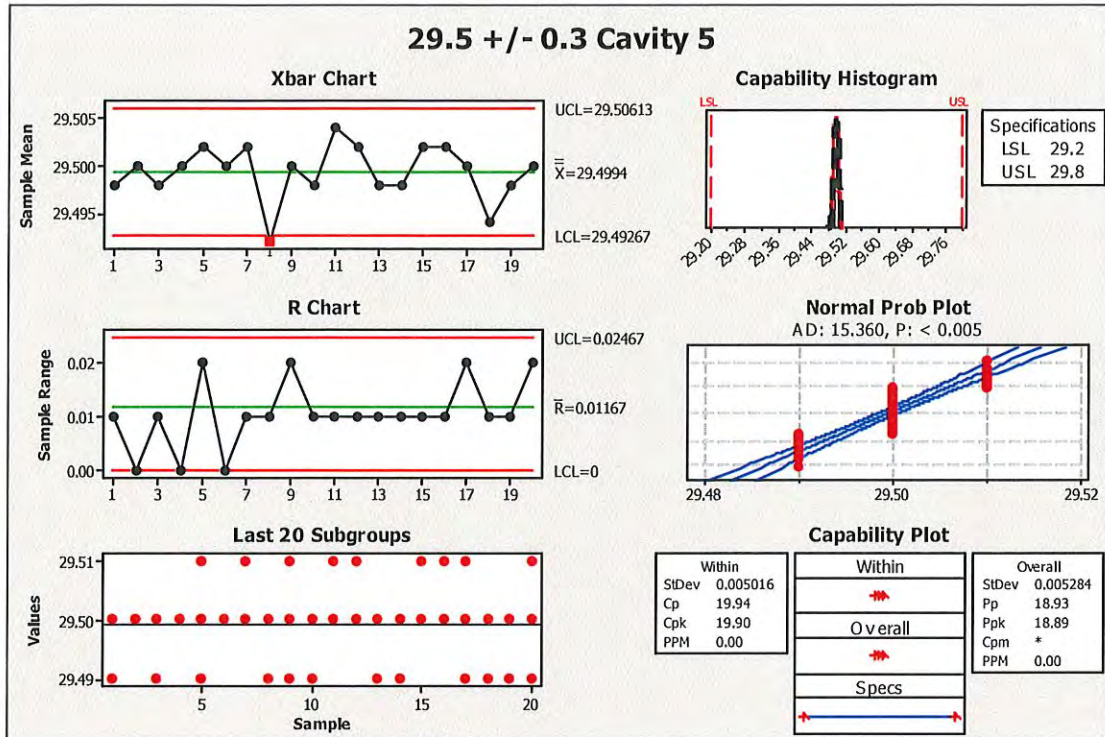
69116579 M1717
Capability Study



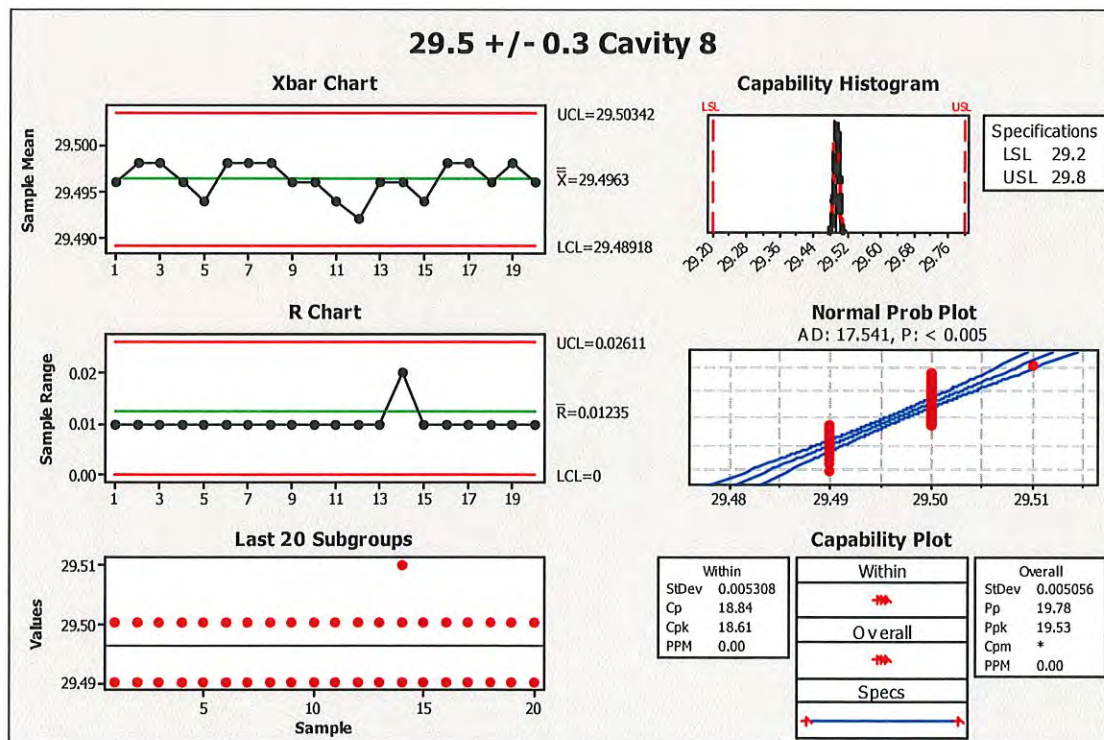
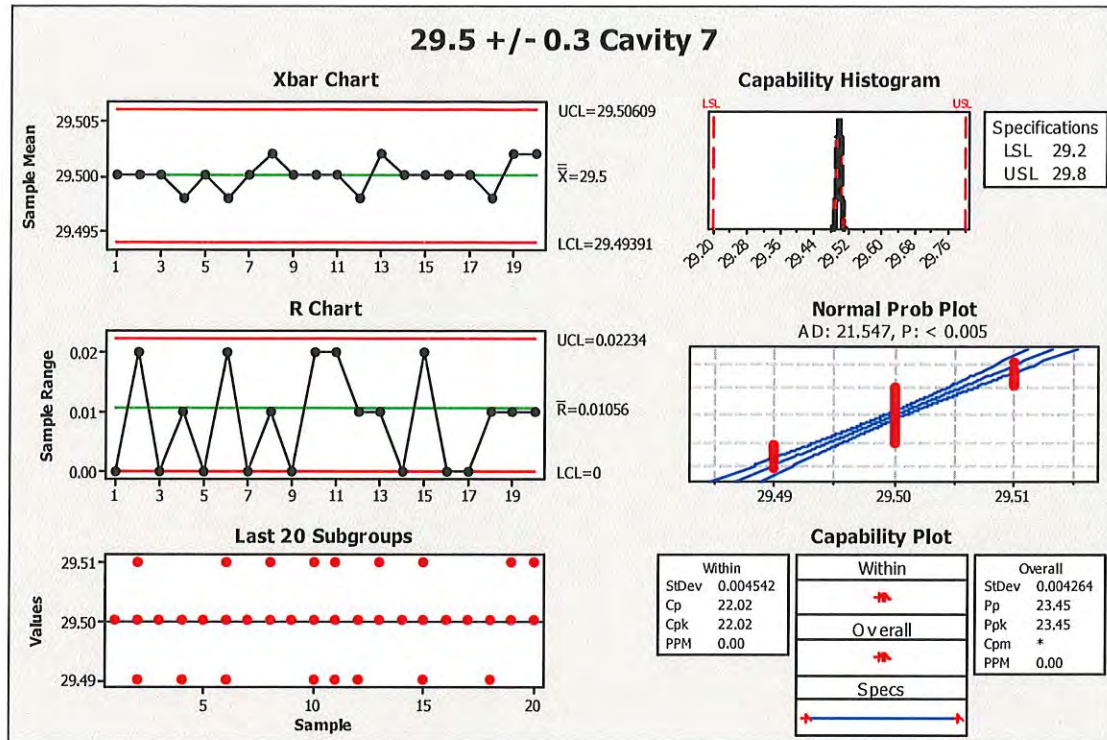
69116579 M1717
Capability Study



69116579 M1717
Capability Study

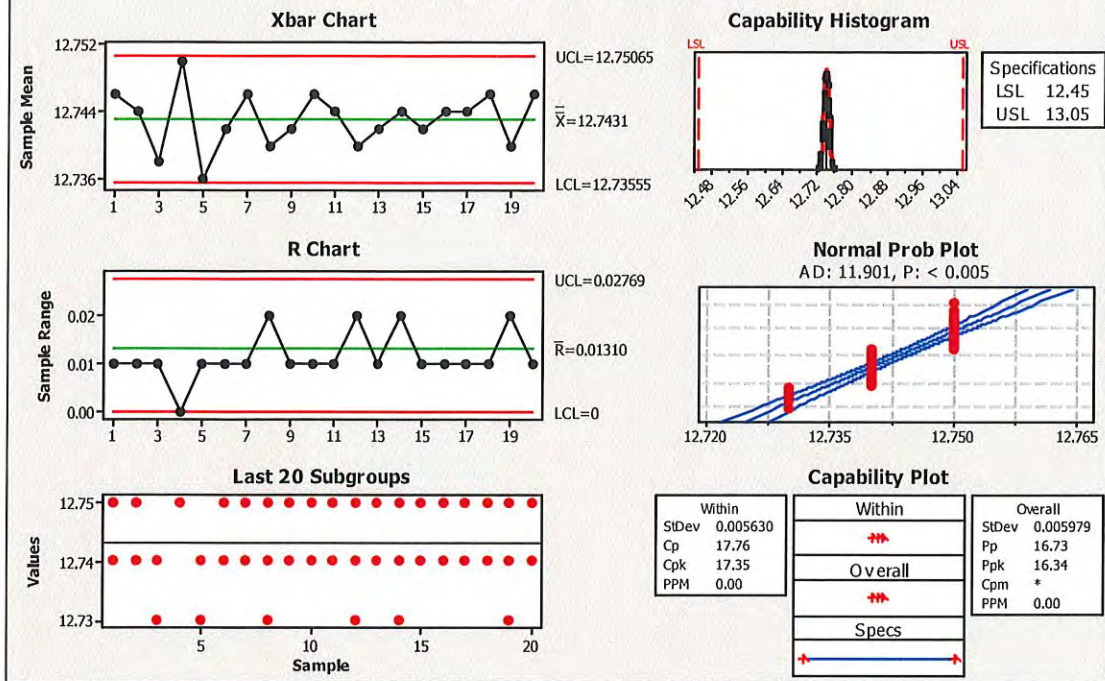


69116579 M1717
Capability Study

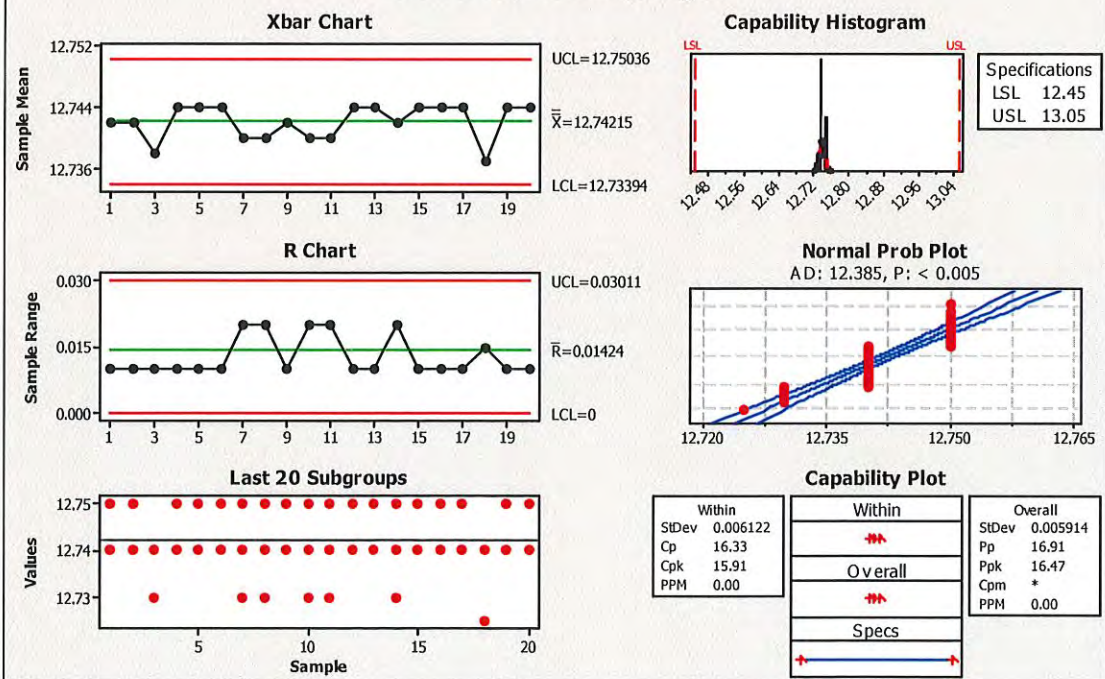


69116579 M1717
Capability Study

12.75 +/- 0.3 Cavity 1

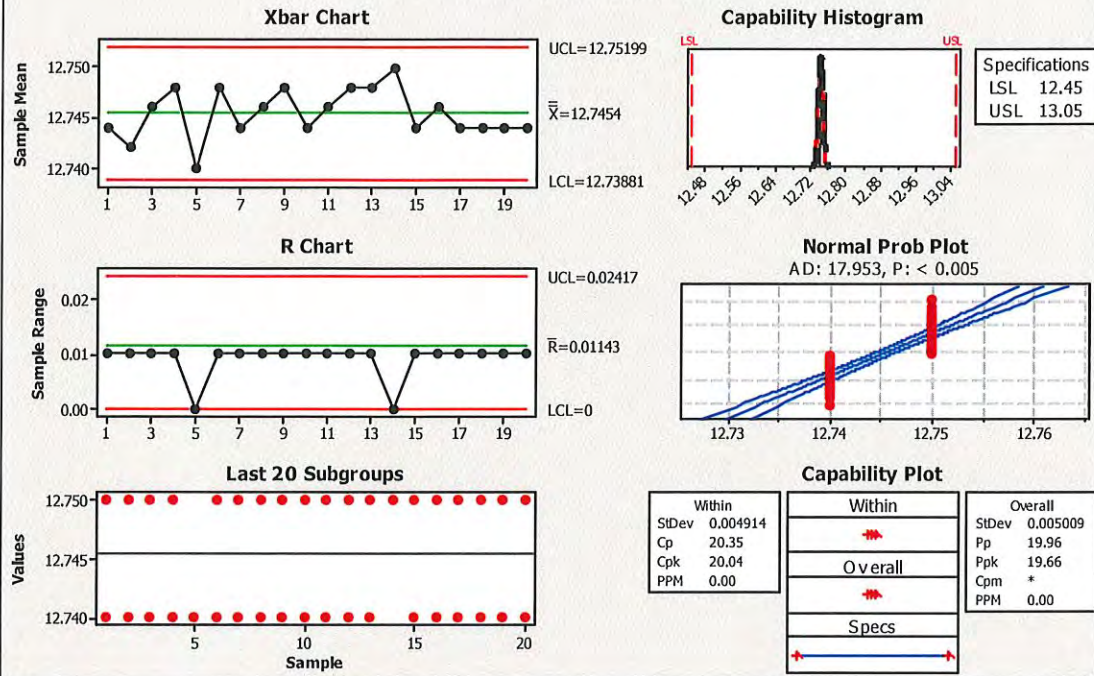


12.75 +/- 0.3 Cavity 2

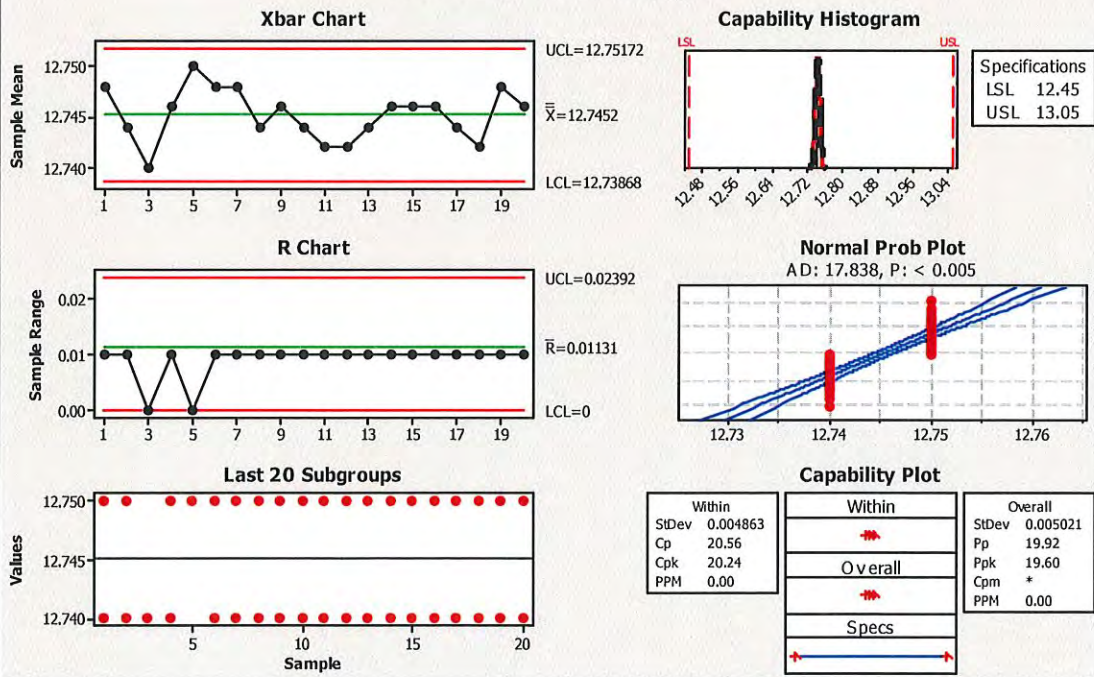


69116579 M1717
Capability Study

12.75 +/- 0.3 Cavity 3

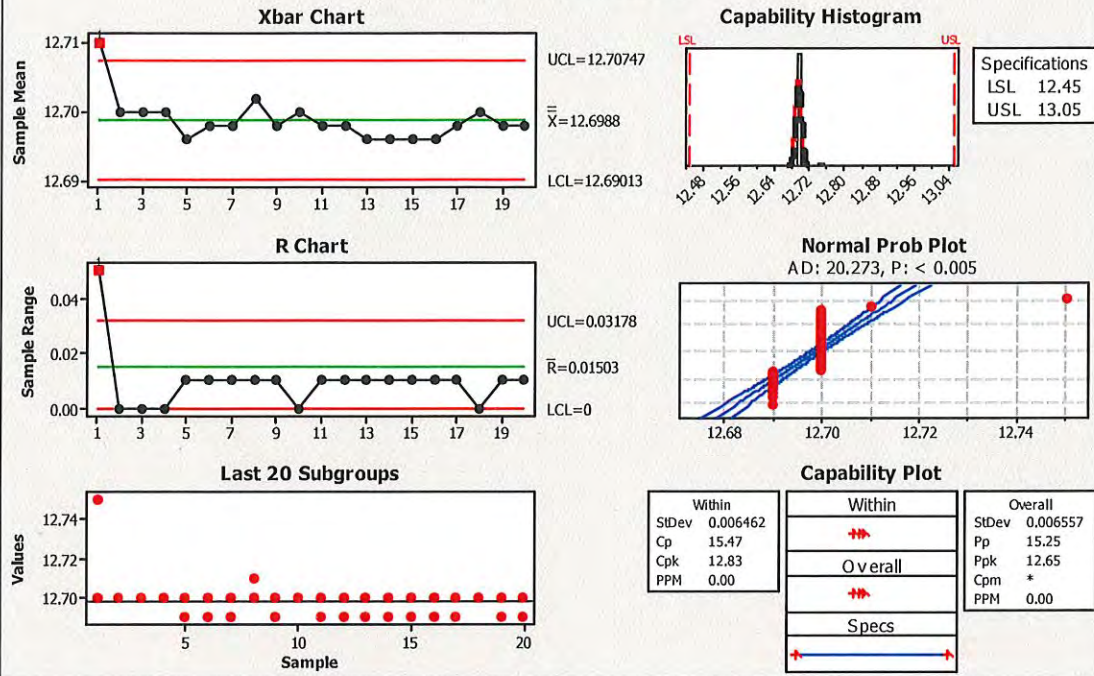


12.75 +/- 0.3 Cavity 4

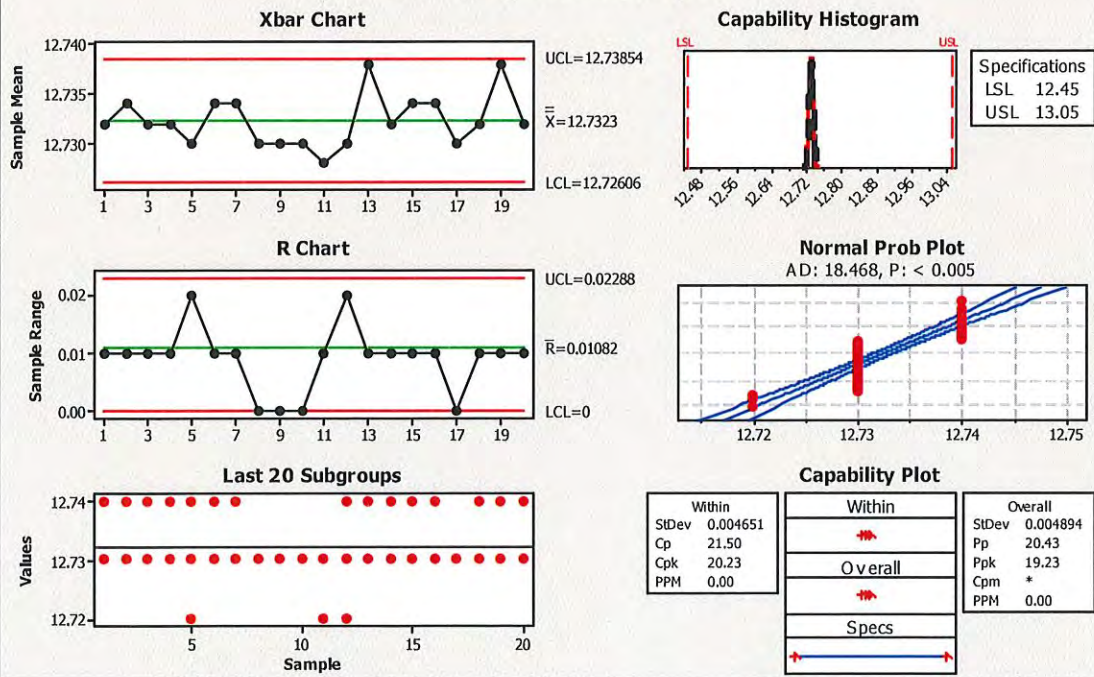


69116579 M1717
Capability Study

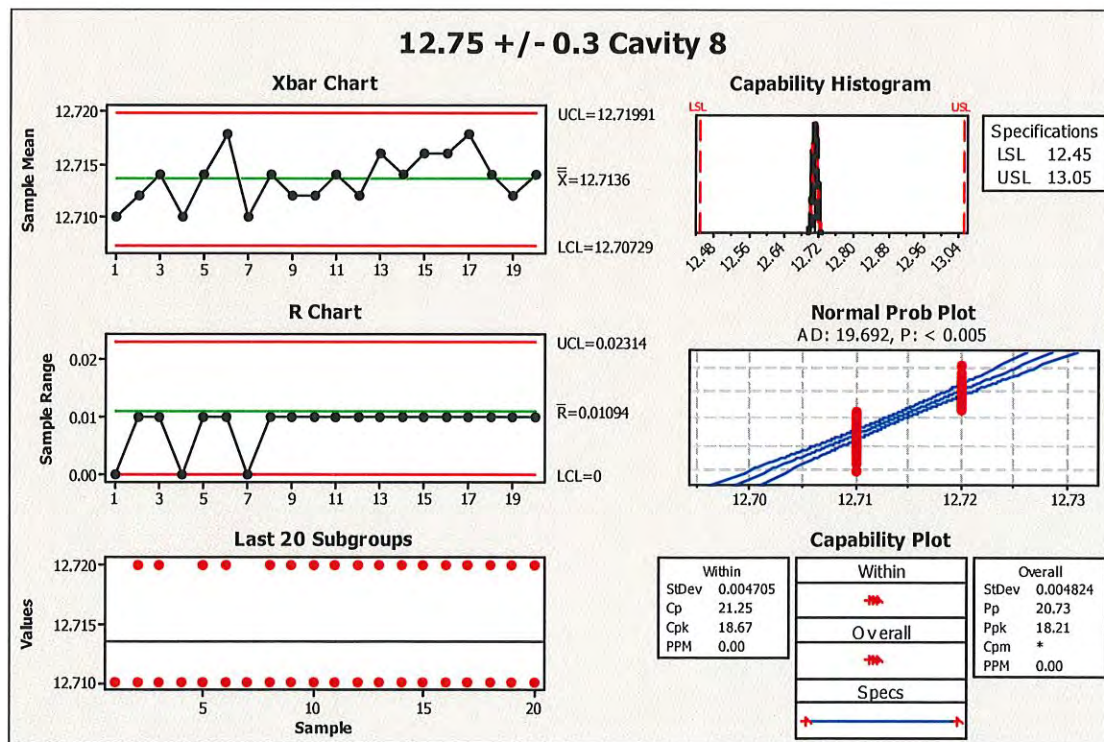
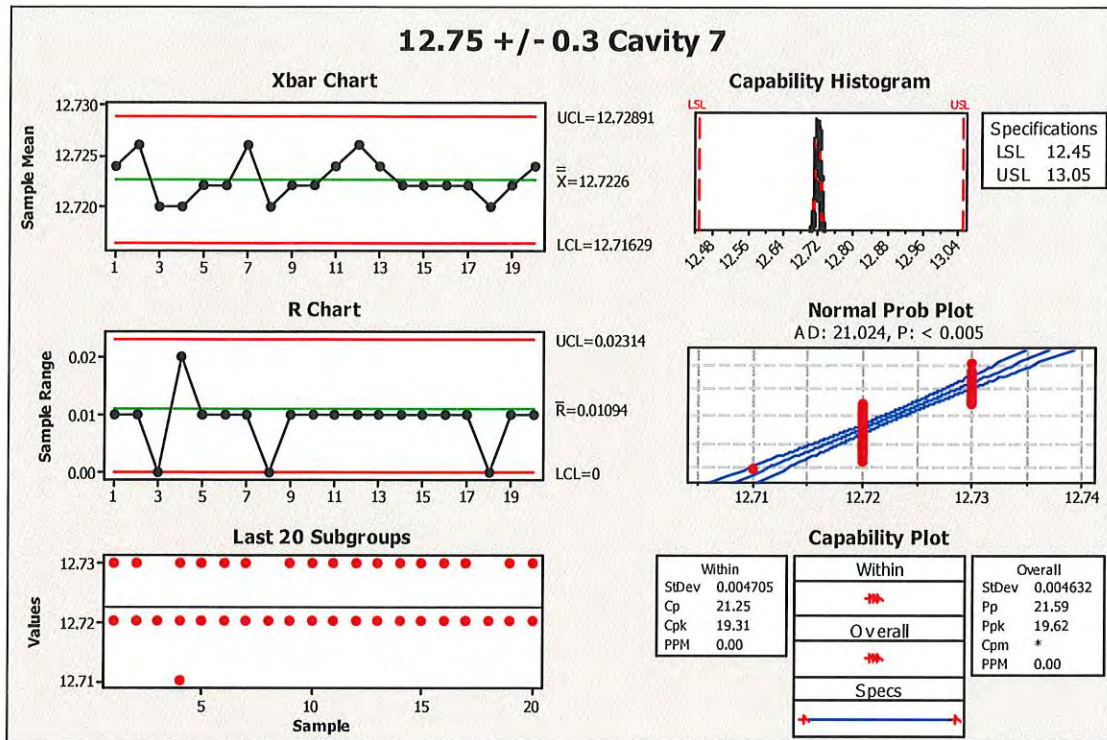
12.75 +/- 0.3 Cavity 5



12.75 +/- 0.3 Cavity 6

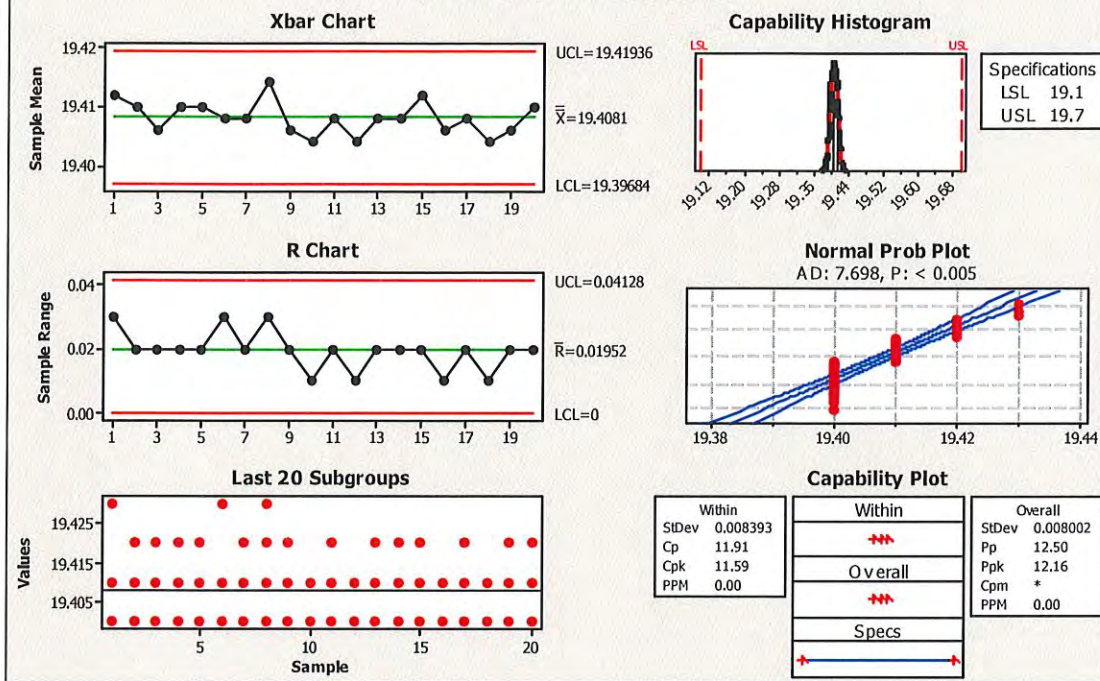


69116579 M1717
Capability Study

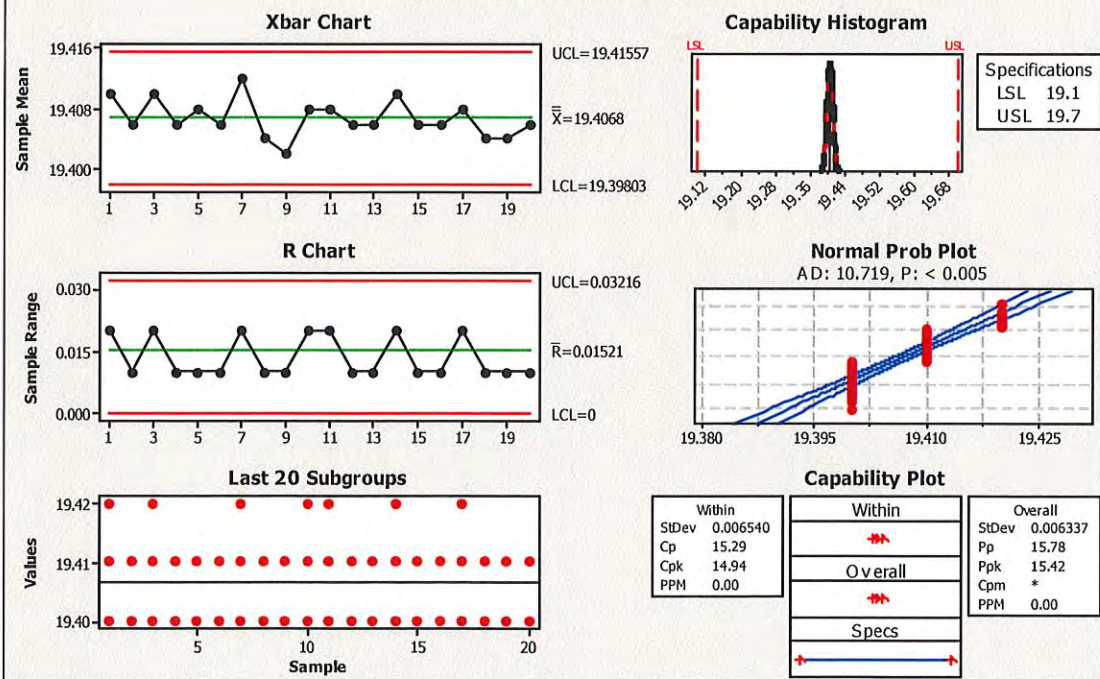


69116579 M1717
Capability Study

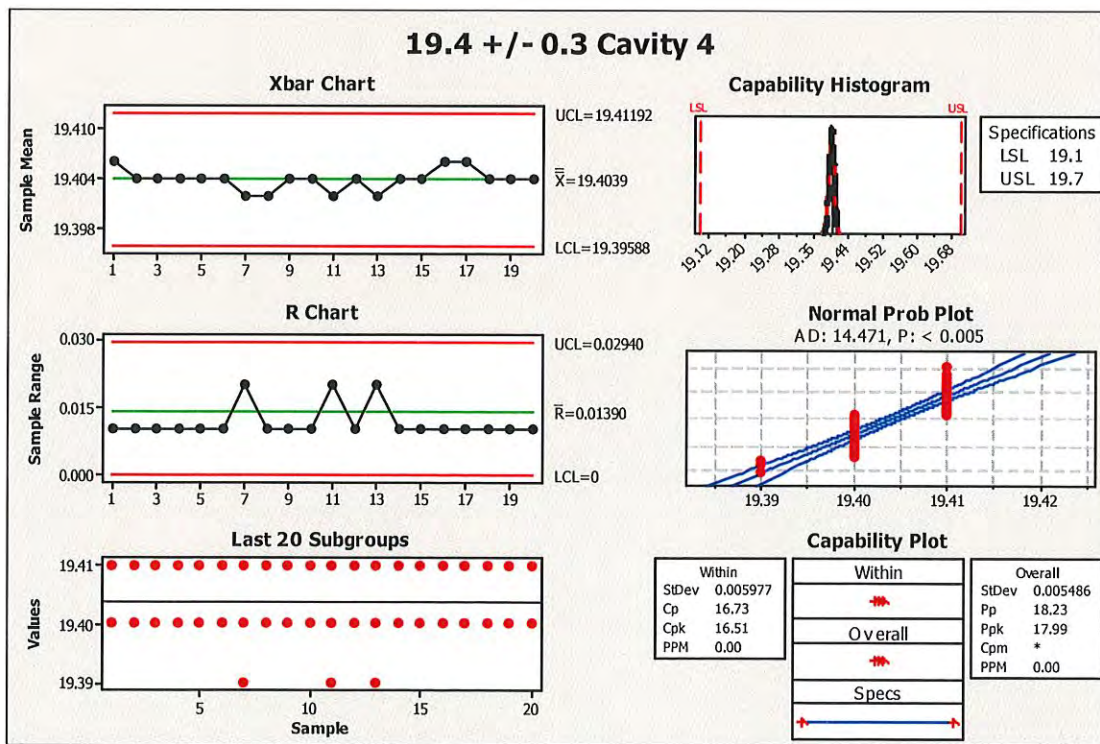
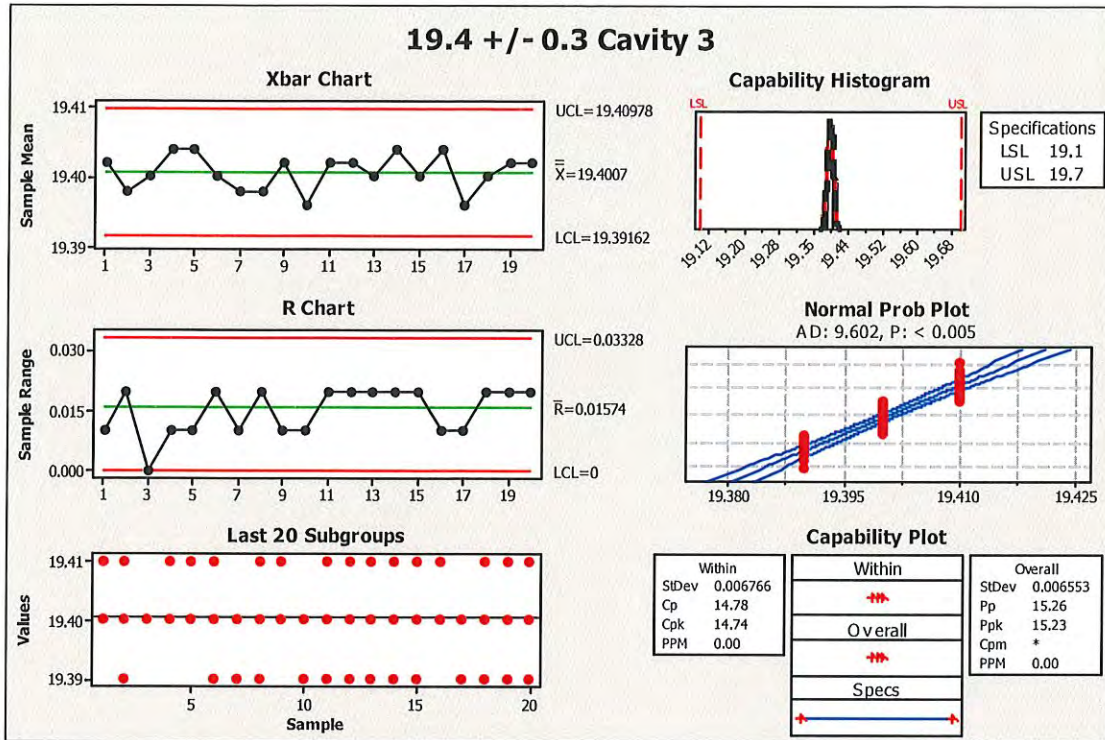
19.4 +/- 0.3 Cavity 1



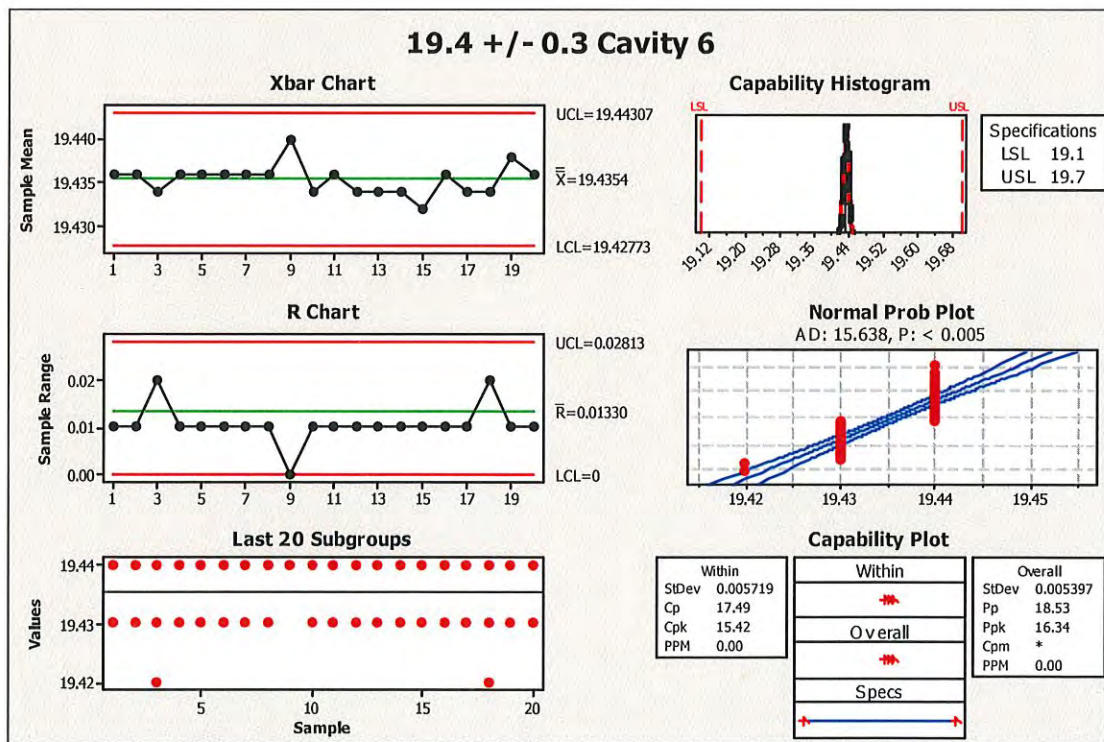
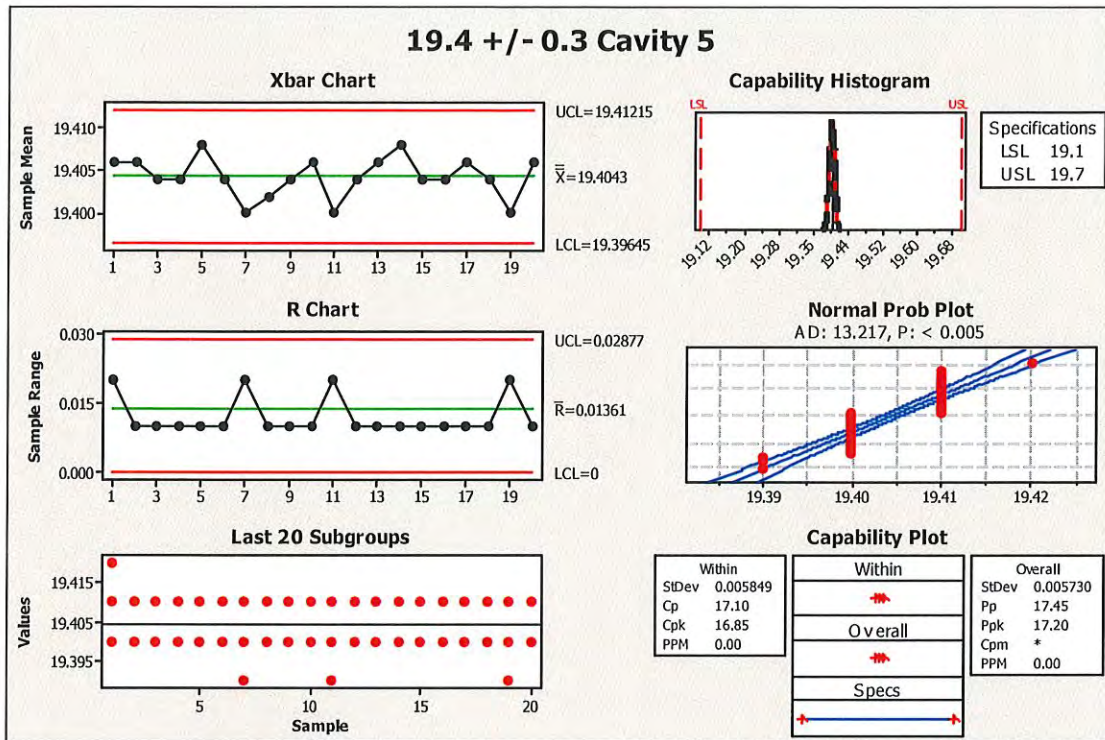
19.4 +/- 0.3 Cavity 2



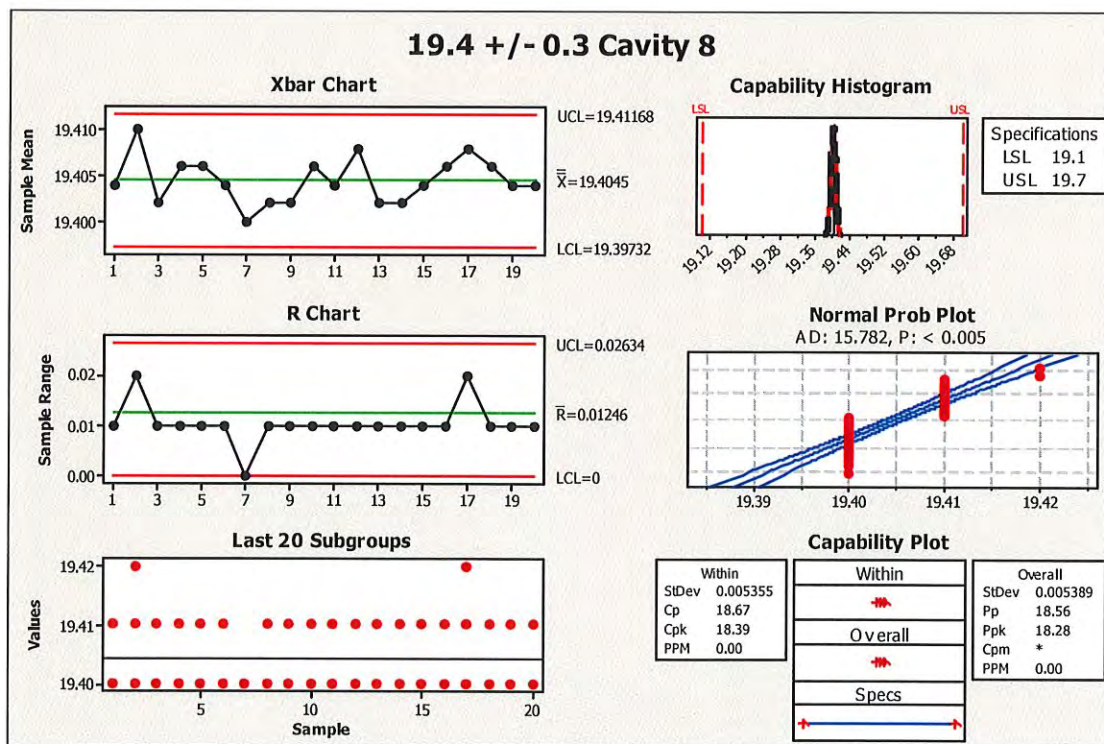
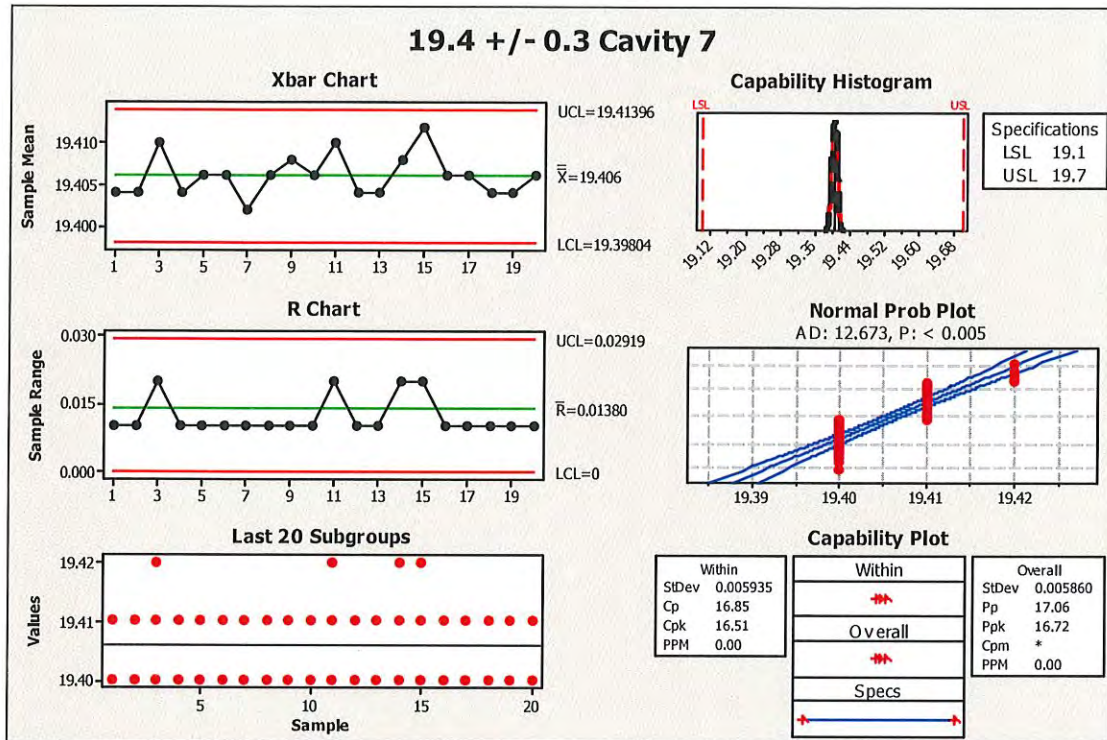
69116579 M1717
Capability Study



69116579 M1717
Capability Study



69116579 M1717
Capability Study





Gauge Repeatability and Reproducibility Report

Part No. & Name	68116579	Gage Name	Digital Calipers	Date	7/2/18
Part Characteristic	29.5 mm +/-0.3 Length	Gage Make	Mitutoyo	Performed By	LR
Total Tolerance	0.6	Gage Model	6 Inch		
USL	29.8	Gage resolution:	0.01		
LSL	29.2				

Measurement Units appear to be adequate to detect part variation

MEASUREMENT UNIT ANALYSIS	% TOLERANCE ANALYSIS ¹ (for Product Control Decisions)	% STUDY VARIATION ² (for Process Control Decisions)	% CONTRIBUTION ³ (for Improvement Decisions)
REPEATABILITY - EQUIPMENT VARIATION (EV)	% EV = 100(EV)/(TOLERANCE) EV = $\frac{\text{StdDev}}{6 \cdot \text{StdDev}}$ = $\frac{0.00452947}{0.0271768}$ = 4.53%	% EV = 100(EV)/(TV) % EV = 26.56%	% EV = 100(s_{eq}^2)/(s_v^2) % EV = 7.05%
REPRODUCIBILITY - APPRAISER VARIATION (AV)	% AV = 100(AV)/(TOLERANCE) AV = $\frac{\text{StdDev}}{6 \cdot \text{StdDev}}$ = $\frac{0.00064033}{0.003845}$ = 0.64%	% AV = 100(AV)/(TV) % AV = 3.76%	% AV = 100(s_{ap}^2)/(s_v^2) % AV = 0.14%
REPEATABILITY AND REPRODUCIBILITY (R&R)	P/T Ratio = 100((R&R)/(TOLERANCE)) P/T Ratio = 4.57%	% GRR = 100((R&R)/(TV)) % GRR = 26.82%	% GRR = 100(s_{eq}^2)/(s_v^2) % GRR = 7.20%
PART VARIATION (PV)	% PV = 100(PV)/(TOLERANCE) PV = $\frac{\text{StdDev}}{6 \cdot \text{StdDev}}$ = $\frac{0.01642911}{0.0085747}$ = 16.43%	% PV = 100(PV)/(TV) % PV = 96.34%	% PV = 100(s_{eq}^2)/(s_v^2) % PV = 92.80%
TOTAL VARIATION (TV)	TV = $\frac{\text{StdDev}}{6 \cdot \text{StdDev}}$ = $\frac{0.0170541}{0.1023246}$ = 17.05%	TOTAL VARIATION TOTAL VARIATION = 100.00%	TOTAL VARIATION TOTAL VARIATION = 100.00%
PROBABLE MEASUREMENT ERROR (effective resolution of a single measurement)	PME = $\pm \frac{\text{StdDev}}{6}$ = $\pm \frac{0.00306497}{6}$	NUMBER OF DISTINCT CATEGORIES ⁴ DISCRIMINATION RATIO ⁵ DR = 5.03	

¹ Product Control - Answers the question: Is this gauge good enough to inspect this part to this tolerance?
² Process Control - Answers the question: Is this gauge good enough for SPC or statistical analysis?
³ Answers the question: What components of variation are candidates for improvement?
⁴ Based on GRR (Repeatability and Reproducibility)
⁵ Based on EV (Repeatability)
Border/Text Color Key: GREEN = Acceptable; ORANGE = Marginal; RED = Unacceptable

GAGE REPEATABILITY AND REPRODUCIBILITY DATA SHEET (Long Method)

Operator	1	2	3	4	5	6	7	8	9	10	11	12
Sample #	1st Trial	2nd Trial	3rd Trial	Range	1st Trial	2nd Trial	3rd Trial	Range	1st Trial	2nd Trial	3rd Trial	Range
1	29.520	29.510	29.510	0.01	29.520	29.520	29.520	0.00	29.520	29.510	29.520	0.01
2	29.510	29.520	29.510	0.01	29.510	29.500	29.500	0.01	29.510	29.510	29.510	0.00
3	29.500	29.500	29.500	0.00	29.500	29.500	29.510	0.01	29.500	29.490	29.500	0.01
4	29.540	29.530	29.530	0.01	29.530	29.540	29.540	0.01	29.540	29.530	29.530	0.01
5	29.530	29.530	29.530	0.00	29.520	29.530	29.520	0.01	29.530	29.530	29.530	0.00
6	29.500	29.490	29.500	0.01	29.510	29.500	29.510	0.01	29.500	29.510	29.510	0.01
7	29.490	29.490	29.500	0.01	29.490	29.500	29.500	0.01	29.500	29.510	29.490	0.02
8	29.510	29.500	29.510	0.01	29.510	29.510	29.510	0.00	29.510	29.510	29.510	0.00
9	29.530	29.530	29.530	0.00	29.520	29.530	29.520	0.01	29.530	29.520	29.530	0.01
10	29.550	29.550	29.540	0.01	29.540	29.550	29.550	0.01	29.560	29.550	29.550	0.01
Totals	295.18	295.15	295.16	0.07	295.15	295.18	295.18	0.08	295.2	295.17	295.18	0.08
		295.18	295.16	0.007		295.15	295.18	0.008		295.2	295.18	0.008
		295.16				295.18				295.18		
	Sum	885.49			Sum	885.51			Sum	885.55		
	$\bar{X}_A$	29.5163333			$\bar{X}_B$	29.517			$\bar{X}_C$	29.5183333		

$\bar{R}_A$	0.007
$\bar{R}_B$	0.008
$\bar{R}_C$	0.008
Sum	0.023
$\bar{R}$	0.00766667

# Trials	D_4
2	3.27
3	2.58

$(\bar{R}) \times (D_4) = UCL_R$
0.00766667 2.58 0.01978

Max $\bar{X}$	29.5183333
Min $\bar{X}$	29.5163333
$\bar{X}$ Diff.	0.002

* Limit of individual R's. Circle those that are beyond this Limit. Identify the cause and correct. Repeat these readings using the same appraiser and unit as originally used or discard and reaverage and recompute $\bar{R}$ and the limiting value UCL_R from the remaining observations

Notes:



Gauge Repeatability and Reproducibility Report

Part No. & Name	69116579		Gage Name	MicroVu	Date	7/9/2018
Part Characteristic	19.4 overall Height		Gage Make	Vision System	Performed By	LR
Total Tolerance	0.6	Scale	M	Gage Model	M346	
USL	19.7	LSL	19.1	Gage resolution:	0.001	

Measurement Units appear to be adequate to detect part variation

MEASUREMENT UNIT ANALYSIS	% TOLERANCE ANALYSIS ¹ (for Product Control Decisions)	% STUDY VARIATION ² (for Process Control Decisions)	% CONTRIBUTION ³ (for Improvement Decisions)
REPEATABILITY - EQUIPMENT VARIATION (EV)	% EV = 100[(EV)/(TOLERANCE)]	% EV = 100[(EV)/(TV)]	% EV = 100[(s_{EV}^2)/(s_{TV}^2)]
EV = $\frac{\text{StdDev}}{6} = \frac{0.009322971}{6} = 0.015537782$	% EV = 3.23%	% EV = 17.64%	% EV = 3.11%
REPRODUCIBILITY - APPRAISER VARIATION (AV)	% AV = 100[(AV)/(TOLERANCE)]	% AV = 100[(AV)/(TV)]	% AV = 100[(s_{AV}^2)/(s_{TV}^2)]
AV = $\frac{\text{StdDev}}{6} = \frac{0.0014166}{6} = 0.00084996$	% AV = 1.42%	% AV = 7.74%	% AV = 0.60%
REPEATABILITY AND REPRODUCIBILITY (R&R)	P/T Ratio = 100[(R&R)/(TOLERANCE)]	% GRR = 100[(R&R)/(TV)]	% GRR = 100[($s_{R\&R}^2$)/(s_{TV}^2)]
GRR = $\frac{\text{StdDev}}{6} = \frac{0.00352672}{6} = 0.0211603$	P/T Ratio = 3.53%	% GRR = 19.26%	% GRR = 3.71%
PART VARIATION (PV)	% PV = 100[(PV)/(TOLERANCE)]	% PV = 100[(PV)/(TV)]	% PV = 100[(s_{PV}^2)/(s_{TV}^2)]
PV = $\frac{\text{StdDev}}{6} = \frac{0.01796716}{6} = 0.1078029$	% PV = 17.97%	% PV = 98.13%	% PV = 96.29%
TOTAL VARIATION (TV)	TOTAL VARIATION	TOTAL VARIATION	TOTAL VARIATION
TV = $\frac{\text{StdDev}}{6} = \frac{0.01631001}{6} = 0.1098601$	18.31%	100.00%	100.00%
PROBABLE MEASUREMENT ERROR (effective resolution of a single measurement)		NUMBER OF DISTINCT CATEGORIES ⁴	
PME = $\pm \frac{0.0023629}{6}$		7	
		DISCRIMINATION RATIO ⁵	
		DR = 7.81	

¹ Product Control - Answers the question: Is this gauge good enough to inspect this part to this tolerance?
² Process Control - Answers the question: Is this gauge good enough for SPC or statistical analysis?
³ Answers the question: What components of variation are candidates for improvement?
⁴ Based on GRR (Repeatability and Reproducibility)
⁵ Based on EV (Repeatability)
Border/Text Color Key: GREEN = Acceptable; ORANGE = Marginal; RED = Unacceptable

GAGE REPEATABILITY AND REPRODUCIBILITY DATA SHEET (Long Method)

Operator	1	2	3	4	5	6	7	8	9	10	11	12
Sample #	A				B				C			
	1st Trial	2nd Trial	3rd Trial	Range	1st Trial	2nd Trial	3rd Trial	Range	1st Trial	2nd Trial	3rd Trial	Range
1	19.5020	19.5080	19.5030	0.006	19.5050	19.5020	19.5050	0.003	19.5020	19.4980	19.5020	0.004
2	19.5040	19.5020	19.5030	0.002	19.5090	19.5040	19.5030	0.006	19.4970	19.5040	19.5020	0.007
3	19.5350	19.5340	19.5280	0.007	19.5380	19.5350	19.5370	0.003	19.5350	19.5310	19.5350	0.004
4	19.5010	19.4980	19.4980	0.003	19.5040	19.5010	19.5000	0.004	19.4940	19.4990	19.5010	0.007
5	19.4870	19.4820	19.4840	0.005	19.4880	19.4870	19.4850	0.003	19.4860	19.4870	19.4790	0.008
6	19.4950	19.4940	19.5000	0.006	19.4970	19.4950	19.4930	0.004	19.4950	19.4940	19.4890	0.006
7	19.4780	19.4830	19.4810	0.005	19.4870	19.4780	19.4850	0.009	19.4770	19.4750	19.4780	0.003
8	19.5230	19.5250	19.5330	0.01	19.5180	19.5230	19.5250	0.007	19.5220	19.5230	19.5190	0.004
9	19.5120	19.5170	19.5200	0.008	19.5140	19.5120	19.5070	0.007	19.5120	19.5140	19.5070	0.007
10	19.4760	19.4720	19.4800	0.008	19.4800	19.4760	19.4810	0.005	19.4750	19.4780	19.4760	0.003
Totals	195.013	195.015	195.03	0.06	195.04	195.013	195.021	0.051	194.995	195.003	194.988	0.053
				$\bar{R}_A$				$\bar{R}_B$				$\bar{R}_C$
				0.006				0.0051				0.0053

Lab Technician / Quality Lab

Title :	Lab Scope Procedure	Issued Date :	5/02/2017
Document Control Number :	QA-PR-040	Revision Date :	6/12/2017
Document Approval :	D.Clark	Revision No :	2

1.0 Purpose

- 1.1 The purpose of This procedure summarizes the testing capabilities available to Atlas Precision and clarifies the equipment, test standard, recording method and reaction plans.

2.0 Scope

- 2.1 This applies to the ability to test parts to the customer standard, and recording information on the correct forms.

3.0 Responsibilities

- 3.1 The Quality Manager or lab technician

4.0 Procedure

Testing Method:				
Test Performed	Equipment Used	Test Method	Recording Method	Reaction Method
Waterproof Test	Water Proof Tester	QA-54 Waterproof Test	FQC-1 MQIP	SOP 13.0-001 Control of Nonconforming FQC-2
Insertion & Retention Test	Force Gauge	SEWS Insertion & Retention Procedure	FQC-1 MQIP	SOP 13.0-001 Control of Nonconforming FQC-2
Freeze Test	Freezer	QA-PR-051 Robust Test	FQC-1 MQIP	SOP 13.0-001 Control of Nonconforming FQC-2
Equipment Calibration:				
Gauge blocks	FD Hurka	Calibrated to national standards	FD Hurka Cert	Reject tag procedure
Microvu	FD Hurka	Per procedure – certification supplied	FD Hurka Cert	Reject tag procedure
Comparator	Quality Comparator	Per procedure – certification supplied	Quality Comparator Cert	Reject tag procedure
Moisture analyzer	Sartorius	Per procedure – certification supplied	Sartorius Cert	Reject tag procedure
Weight scales	Braswell Scale	Per procedure – certification supplied	Braswell Scale Cert	Reject tag procedure
Force gage	FD Hurka	Per procedure – certification supplied	FD Hurka	Reject tag procedure
Calipers	FD Hurka	Per procedure – certification supplied	FD Hurka Cert	Reject tag procedure
Micrometers	FD Hurka	Per procedure – certification supplied	FD Hurka Cert	Reject tag procedure
Height stand	FD Hurka	Per procedure – certification supplied	FD Hurka Cert	Reject tag procedure
Drop indicator	FD Hurka	Per procedure – certification supplied	FD Hurka Cert	Reject tag procedure
Gages/fixtures	FD Hurka	Per procedure – certification supplied	Per customer	Reject tag procedure



QA-PR-040 – LAB SCOPE

Lab Technician / Quality Lab

Title :	Lab Scope Procedure	Issued Date :	5/02/2017
Document Control Number :	QA-PR-040	Revision Date :	6/12/2017
Document Approval :	D.Clark	Revision No :	2

5.0 Revision History

Revision	Description	Revised By	Date
0	Updated to new format	J.Dalton	5/02/2017
1	Updated Calibration Resource	J.Dalton	6/06/2017
2	Removed Unused/Out Of Service Items	D. Clark	6/12/2017



PERRY JOHNSON REGISTRARS, INC.

Certificate of Registration

Perry Johnson Registrars, Inc., has audited the Quality Management System of:

Atlas Precision
170 Clayton Road, Arden, NC 28704 United States

*(Hereinafter called the Organization) and hereby declares that
Organization is in conformance with:*

ISO 9001:2015

This Registration is in respect to the following scope:

Manufacture of Injection Molded Plastic Products

*This Registration is granted subject to the system rules governing the Registration referred to above, and the
Organization hereby covenants with the Assessment body duty to observe and comply with the said rules.*

Terry Boboige, President

Perry Johnson Registrars, Inc. (PJR)
755 West Big Beaver Road, Suite 1340
Troy, Michigan 48084
(248) 358-3388



The use of the UKAS accreditation symbol is in respect to the activities covered by the Accreditation Certificate Number 0105.

The validity of this certificate is dependent upon ongoing surveillance.

Effective Date:
December 6, 2016

Revision Date:
May 10, 2018

Expiration Date:
December 5, 2019

Certificate No.:
C2016-03491-R1